Advanced Practical Applications of Mathematics

Course Description

This course answers the question, "When will I ever use this?" The course provides real world integrated practical applications of algebra, geometry, statis

Course Code: *This course does NOT have a separate code but the naterial can be infused into existing Math or STS courses.*

Program of Study to which the course applies

All STS Programs of Study

	Course Content	Reference/Source	Nebraska Academic Standard	Common Core
Standard 1	Students will be able to practically apply algebraic concepts			
Benchmark 1.1	Evaluating functions and relations as they apply to practical problems	*CCSS,NDE*		
Sample Performance Indicator 1.1.1	Create and solve a function to determine the spacing between shelves given the shelf thickness and floor to ceiling height.			
Sample Performance Indicator 1.1.2	Compute the stopping distance of a car traveling at a given	PUMAS		
Sample Performance Indicator 1.1.3	Research the total operating costs of two different			
Benchmark 1.2	Modeling functions and relations using life applications	*CCSS,NDE*		
Sample Performance Indicator 1.2.1	Measure the armspan and height of several students,			
Sample Performance Indicator 1.2.2	Using ratios, create a scale orthographic drawing of a			
Sample Performance Indicator 1.2.3	Given the hourly wages of two workers, total hours spent			
Standard 2	Students will be able to practically apply geometric			
Benchmark 2.1	Analyzing characteristics, properties, and relationships	*CCSS,NDE*		
Sample Performance Indicator 2.1.1	Given the dimensions of a building determine the			
Sample Performance Indicator 2.1.2	Determine the difference in a length of string laid out on			
Sample Performance Indicator 2.1.3	How much additional material is needed if the pitch of a			
Benchmark 2.2	Applying units, systems, and formulas to solve problems	*CCSS,NDE*		
Sample Performance Indicator 2.2.1	Calculate the sheet metal used to build a closed right			
Sample Performance Indicator 2.2.2	Given a length of fencing, determine the geometric shape			
Sample Performance Indicator 2.2.3	Given a can size, determine the optimum box size to			

Benchmark 2.3	Visualizing and utilizing spatial reasoning and geometric	*CCSS,NDE*
Sample Performance Indicator 2.3.1	How much land is needed to build four baseball fields with	
Sample Performance Indicator 2.3.2	Determine the number of gallons of water your local	
Sample Performance Indicator 2.3.3	Determine the distance between two GPS coordinates.	
Standard 3	Students will be able to practically apply trigonometric	
Benchmark 3.1	Applying trigonometric identities	*CCSS,NDE*
Sample Performance Indicator 3.1.1	Determine the height of a flagpole by at least two methods.	
Sample Performance Indicator 3.1.2	Use SOH CAH TOA to solve trigonometric problems. ie	
Sample Performance Indicator 3.1	Given a sloped ceiling angle and the length of the two	
Benchmark 3.2	Using the unit circle	*CCSS,NDE*
Sample Performance Indicator 3.2.1	Given a small and large gear rotating together, what is the	
Sample Performance Indicator 3.2.2	Given a diameter of a cogwheel determine the ordered	
Sample Performance Indicator 3.2.3	Given its 10 am on a clock what is the angle in radians	See additional
Benchmark 3.3	Modeling periodic phenomena	*CCSS,NDE*
Sample Performance Indicator 3.3.1	Determine the characteristics of periodic waveforms within	See additional
Standard 4	Students will be able to practically apply statistical	
Benchmark 4.1	Interpreting categorical and quantitative data with real	*CCSS,NDE*
Sample Performance Indicator 4.1.1	Given a set of data determine the measures of central	
Sample Performance Indicator 4.1.2	Determine the expected waiting time at a stoplight	PUMAS
Benchmark 4.2	Generating inferences and justifying conclusions in	*CCSS,NDE*
Sample Performance Indicator 4.2.1	Develop a quality control chart to determine when a corn	
Sample Performance Indicator 4.2.2	Conduct a correlational study of student's choice to	
Sample Performance Indicator 4.2.3	Conduct a scientific experiment using a control group to	
Benchmark 4.3	Using probability to make decisions in the real world	*CCSS,NDE*
Sample Performance Indicator 4.3.1	Given a normally distributed population what is the	
Sample Performance Indicator 4.3.2	Determine the probability of an event given that another	
Sample Performance Indicator 4.3.3	Using a standard deck of cards determine the probability	